

MANAGEMENT OF GANODERMA WILT DISEASE OF COCONUT IN KERALA

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Ganoderma wilt or Anabe disease has been reported on coconut and arecanut by Venkatarayan (1936) from Karnataka and later, on coconut in Andhra Pradesh by Rao and Rao (1966). It was reported as Thanjavur wilt in Tamil Nadu (Vijayan and Nataraajan, 1972). Nambiar and Rethinam (1987) and Wilson *et al* (1987) reported the disease in some pockets in Palghat District in Kerala. Incidence up to 10% was observed in some gardens in Palghat district.

The disease is characterised by wilting of leaflets, yellowing of leaves in the outer whorl and their drooping one after another. The trunk gradually tapers and yield is reduced. As the disease advances, the stem base shows bleeding symptoms. The tissue underlying the lesions are decayed. The internal decay in the bole is deep. Roots also show extensive decay. The disease has now been confirmed to be caused by *Ganoderma lucidum* and *G. applanatum* by pathogenicity tests conducted at Veppankulam and Ambajipet centres (Anon, 1991).

In earlier years, a number of field control experiments were laid out in Tamil Nadu and Andhra

Pradesh under the aegis of All Indian Co-ordinated Research Project on palms. These field trials have helped in suggesting suitable control schedules

for the above regions (Bhaskaran and Ramanaathan 1982, Bhaskaran *et al*; 1988, 1989, Gunasekharan *et al*; 1986, Satyanarayanan *et al*; 1985). Since no information on the control of the disease in Kerala was available, based on the above results, a field control trial was laid out in four gardens in Palghat district in August 1986.

The treatment comprised root feeding of tridemorph (Calixin) @ 2ml and Aureofungin sol @ 2g per 100 ml of water per

palm. For every 2 g Aureofungin sol, one gram copper sulphate was added while dissolving in water. The fungicide solution (100 ml)



Ganoderma wilt affected coconut palm - drooping of leaves.

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Bracket of *Ganoderma*

was taken in a small polythene sachet. Young healthy roots (creamy white or pink in colour) of diseased palms were exposed by carefully digging the basin. Old roots (brownish black or brown in colour) were avoided. The roots were washed with water and root apex or cut ends of roots were dipped in the fungicide solution taken in the polythene bag. The mouth of the bag was tied with a thread and the poly bag was kept in such a way that the root will be able to absorb the entire quantity of the fungicide solution. Each palm was given the fungicide treatment through root six times during the period from August 1986 to September 1988. The trial was terminated in 1988. The palms received F Y M / compost and green leaf in addition to fertilizer as per recommendation, and 5 kg neem cake.

sion of fungal growth in the root/bole region, the yield of the treated palms was enhanced considerably (Table 1). The lesion area and height did not register any increase even after two years of noticing the symptoms from the initial status.

The gardens were visited in August 1989, almost one year after

the cessation of the treatment and it was observed that except in one garden all the treated palms have recovered and maintained the higher yield. In one garden, the owner used the palms for tapping and hence yield could not be assessed. The results show that Aureofungin sol or Tridemorph root feeding for two years continuously (three applications a year) gave good control of *Ganoderma* wilt. However, since the pathogen is a soil borne fungus and it is difficult to treat the entire soil in the garden, there should be good vigilance to see whether there is any recurrence of the disease. It will be advisable to treat the palms at an interval of two years after the last treatment so that recurrence can be avoided.

Nambiar and Rethinam (1986) and Bhaskaran *et al* (1989) recommended the following measures for the integrated management of the disease. The same can be adopted for the affected gardens in Kerala also.

1. Phytosanitation: Removal of stumps of palms along with bole and root systems in the diseased garden, and palms in advanced stage of disease (giv-

Table 1.
Management of Thanjavur wilt in Kerala (Mean of 4 gardens)

Treatment	Av.no. of leaves/palm				Average yield of nuts/palm			
	1986	1987	1988	1989*	1986	1987	1988	1989*
Aureofungin sol	28	30	31	29	31	46	55	59
Calixin	27	25	28	30	7	30	55	47

* Average of three gardens only since palms in one garden were used for tapping

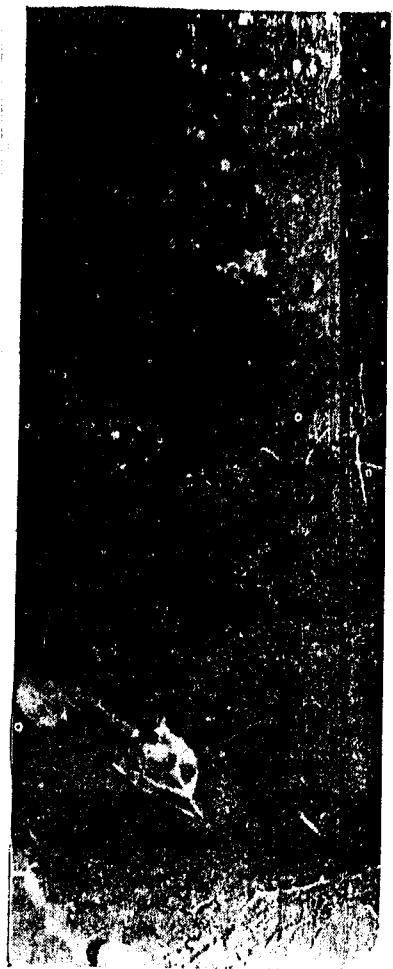


Bleeding symptom at the base of the stem

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- ing uneconomic returns).
2. Isolation of diseased palms from the neighbouring healthy palms by digging trenches 1m deep and 30 cm wide.
3. Provide adequate soil moisture through irrigation coupled with mulches. Avoid flood irrigation to prevent spread of inoculum through irrigation water. Instead, adopt basin irrigation through channels or drip system.
4. In ill-drained gardens, provide good drainage facilities.
5. Apply normal recommended dose of fertilizer (500:320:1200 NPK) in two splits per palm per year, along with 50kg farm yard manure.
6. Apply 5kg neem cake/palm/year in addition, during the time of application of organics. This will help in increasing the growth of microflora like *Trichoderma* antagonistic to the pathogen.
7. Apply Tridemorph 2ml/100ml water per palm per year at quarterly intervals through root feeding. Alternatively Aureofungin sol 2g + 1g copper sulphate dissolved in 100ml water can also be used. The treatment will be effective if the palms are in the early stages of disease.
8. Raise Ganoderma - resistant crops like banana as intercrops in the coconut garden to reduce the spread of disease.
9. Transportation of seedlings from infected area to healthy areas should be avoided.
10. If attack by *Xyleborus* or *Dio-calandra* is observed in the stem of affected palms, 0.2% BHC may be swabbed on the affected trunk.

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